by the fact that the rich calcareous woods provide an unusually favorable site.

Dentaria laciniata Muhl. In addition to the station mentioned above, it also occurs on the talus slope of a cliff in Rumney.

Specimens of all the plants mentioned above have been placed in the New England Botanical Club. — FREDERIC L. STEELE AND A. R. HODGDON, ST. MARY'S-IN-THE MOUNTAINS, LITTLETON, N. H. AND UNIVERSITY OF NEW HAMPSHIRE, DURHAM, N. H.

A NEW MANUAL FOR CALIFORNIA[1]. — The best known work and until now the standard manual covering the entire flora of California has been that of Jepson[2] finally published in 1925. There have been several reissues, since the original, of Jepson's important work and these have served their users well in the decades from 1925 to the present. But even at the time of its appearance, certain limitations in Jepson's Manual were made evident by the fuller and more inclusive treatments of various groups of plants in the parts of several volumes of his own "A Flora of California" then being published. Abrams' Illustrated Flora of the Pacific States, of which we have seen three volumes [the fourth and last volume is nearly ready for release under the authorship of Mrs. R. S. Ferris] has also pointed up the need for improved treatments of various plant groups over the presentation in Jepson's Manual. Officially, the newly published "A California Flora" does not replace Jepson's Manual. However, practically, it does just that and it is as a replacement of the well known Jepson's Manual that we shall consider it in the present review.

Traditionally, a flora or manual attempts to be a guide to the plants growing in a given area. It provides finding-guides in the form of keys to the families, genera, species

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1 A California Flora by Philip A. Munz in collaboration with David D. Keck. 1-1681. University of California Press, Berkeley and Los Angeles. 1959. $11.50.

2 A Manual of the Flowering Plants of California by W. L. Jepson. 1-1238. 1925.

and infraspecific taxa, along with descriptions, habitat notes and information on geographical distributions. A California Flora provides all of these items and in addition gives an indication of the plant community to which the particular taxon belongs and its chromosome number, if that is known. In any early section of the book, five biotic provinces, eleven vegetation types and twenty-nine plant communities are described for California. These subdivisions form the basis for the placing of the taxa into plant communities, as one finds in the write-up of each species, subspecies or variety.

In a volume such as the one under review, the quantity of material included is of such a vast scope that no casual appraisal of it is possible. The proof of the book's value will come only with the demonstrated effectiveness of its service to the user over a period of time. Not all parts of the book will prove to be equally sound, as the author himself predicts, because of the differences in the available information about the various groups of plants treated, if for no other reason. But several different persons did provide the treatments for different genera and parts of families which is bound to produce some unevenness in the book overall. However, this does not detract much, if any, from the book and I predict that a very high percentage of the family treatments will stand up well over the years ahead.

Dr. Munz and his collaborators, to a surprising degree, have availed themselves of modern treatments wherever they could be found. In general, they have accepted the new treatments, yet there has been maintained an overall conservative tone in the book, showing a decided sifting and distilling of conflicting evidence where controversial matters are concerned.

Perhaps the most radical departure in the organization of the book under review, as compared to similar ones, is the abandonment of the Engler and Prantl sequence for the families of the Angiosperms. The new arrangement will be acknowledged to reflect more nearly the presently accepted phylogenetic sequences than the outdated traditional ar-

rangement but it is certain that those familiar with the old arrangement, both in herbaria and in other manuals, will be frequently fumbling in the wrong part of this book for a particular family. The break with tradition in this respect is justified if the presentation of a truer conception of plant relationships is achieved, even though we may regret the loss of the familiar, more convenient arrangement.

As compared with Jepson's Manual, which delineates a total of 4019 species, A California Flora purports to cover, "6,000-odd kinds of plants growing spontaneously in California", according to notes provided on the jacket cover. Since the figures are not comparable, one including only the species and the other inclusive of all "kinds", presumably species and infraspecific taxa, they cannot be compared directly. However, it is clear that a considerable number of presumed taxa not included in Jepson are treated in the Munz book. This is to be expected because of the continued botanical exploration and increased study of the plants of California since 1925. Furthermore, there have been a good many introductions into the California flora during the same period. Some notion as to the increased number of species recognized in the new flora may be obtained by comparing a few of the representative genera with mostly indigenous species, as shown in the following table.

NUMBERS OF SPECIES

GENUS	JEPSON	MUNZ	GENUS	JEPSON	MUNZ
Carex	126	144	Potentilla	44	26
Poa	29	36	Lupinus	65	82
Calochortus	24	37	Lomatium	23	35
Allium	27	38	Phacelia	55	87
Eriogonum	66	76	Penstemon	37	58
Arabis	20	35	Erigeron	32	46
Ribes	26	31	Senecio	33	38

It should not be inferred that because in all but one of the genera listed above there is an increased number of species recognized, a lack of restraint in the recognition of described species characterizes the new manual. Rather, insofar as I

can judge, it appears that the increased number of species recognized merely reflects a more accurate coverage of the plants of the area than heretofore. Thus viewed, one sees that the new book was definitely needed and those interested in California plants should find it to be a considerable improvement over Jepson's Manual. In turning from the old to the new, students will not mind leaving behind the confusing English line that was used for short dimension measurements throughout the older work, but they will miss the many pertinent illustrations. Munz' Manual has a rather minimal number of illustrations. Those present are of good quality, but there are too few to be of any real importance to the book as a whole. The book is well manufactured and well printed. The inevitable slips are to be found, such as the page references being upside down for groups 3 through 5 on page 68, but these seem to be at a minimum.

A California Flora is a notable addition to the growing list of state floras in the United States and because of the high endemism in that flora, there is more justification for the use of the state boundaries to delimit the area of coverage than in most state floras. This book is among the best of its kind and every serious botanist interested in the plants of the California area will want a copy near at hand. — REED C. ROLLINS, GRAY HERBARIUM OF HARVARD UNIVERSITY.

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